

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A video encoding apparatus comprising motion compensation prediction means for dividing a coding target frame into a plurality of blocks, generating a prediction reference image that are formed by providing interpolated pixels which are produced by interpolation between integer pixels of a reference frame in a predetermined region of the reference frame, and generating a predicted image of the coding target frame by determining a motion vector for the prediction reference images for each of the plurality of blocks,

the motion compensation prediction means having:

complexity extraction means for extracting complexity information which indicates a degree of complexity of movement between said coding target frame and said reference frame for each of the plurality of blocks;

filter storing means for preliminarily storing two low-pass filters with different high-frequency cutoff characteristics; and

predicted image generating means for determining the number of filtering pixels depending on said complexity information for each of the plurality of blocks on basis of a predetermined rule, wherein said filtering pixel is said interpolated pixel which have pixel values produced by applying the low-pass filter having the narrower spectral band-pass in low frequency band of said two low-pass filters to neighborhood integer pixels.

2. (Previously Presented) A video encoding method including a motion compensation prediction step in which motion compensation prediction means divides a coding target frame into a plurality of blocks, generates a prediction reference image that are formed by providing interpolated pixels which are produced by interpolation between integer pixels of a reference frame in a predetermined region of the reference frame, and determining a motion vector for the prediction reference image for each of the plurality of blocks,

wherein, in the motion compensation prediction step complexity extraction means extracts complexity information which indicates a degree of complexity of movement from the reference frame for each of the plurality of blocks, and

predicted image generating means determines the number of filtering pixels depending on said complexity information for each of the plurality of blocks on basis of a predetermined rule, wherein said filtering pixel is said interpolated pixel which have pixel values produced by applying the low-pass filter having the narrower spectral band-pass in low frequency band of two low-pass filters with different high-frequency cutoff characteristics which preliminarily stored to neighbor integer pixels.

3. (Previously Presented) The video encoding method according to claim 2, wherein the complexity extraction means uses an absolute value of a differential motion vector of a block neighboring the block for which the complexity information is to be extracted as the complexity information.

4. (Previously Presented) The video encoding method according to claim 2 further comprising conversion step in which conversion means converts predicted residual difference image produced by calculating a difference between the coding target frame and the predicted image into a set of coefficients on the basis of a predetermined conversion rule,

wherein the complexity extraction means use the numbers of non-zero coefficients among the coefficients in a block neighboring the blocks for which the complexity information is to be extracted as the complexity information.

5. (Original) The video encoding method according to claim 2, wherein the complexity extraction means uses an absolute value of a differential motion vector of the blocks for which complexity information is to be extracted as the complexity information.

6. (Previously Presented) A computer readable medium having a video encoding program which causes a computer to function as motion compensation prediction means for dividing a coding target frame into a plurality of blocks, generating a prediction reference image that are formed by providing interpolated pixels which are produced by interpolation between integer pixels of a reference frame in a predetermined region of the reference frame, and generating a predicted image of the coding target frame by determining a motion vector for the prediction reference images for each of the plurality of blocks,
the motion compensation prediction means having:

complexity extraction means for extracting complexity information which indicates a degree of complexity of movement between said coding target frame and said reference frame for each of the plurality of blocks; and

filter storing means for preliminarily storing two low-pass filters with different high-frequency cutoff characteristics; and

predicted image generating means for determining the number of filtering pixels depending on said complexity information for each of the plurality of blocks on basis of a predetermined rule, wherein said filtering pixel is said interpolated pixel which have pixel values produced by applying the low-pass filter having the narrower spectral band-pass in low frequency band of said two low-pass filters to neighborhood integer pixels.

7. (Previously Presented) A video decoding apparatus comprising motion compensation prediction means for dividing a decoding target frame into a plurality of blocks, generating a prediction reference image that are formed by providing interpolated pixels which are produced by interpolation between integer pixels of a reference frame in a predetermined region of the reference frame and performing motion compensation based on a motion vector included in compression data by using the prediction reference image,

the motion compensation prediction means having:

complexity extraction means for extracting complexity information which indicates a degree of complexity of movement between said coding target frame and said reference frame for each of the plurality of blocks;

filter storing means for preliminarily storing two low-pass filters with different high-frequency cutoff characteristics; and

predicted image generating means for determining the number of filtering pixels depending on said complexity information for each of the plurality of blocks on basis of a predetermined rule, wherein said filtering pixel is said interpolated pixel which have pixel values produced by applying the low-pass filter having the narrower spectral band-pass in low frequency band of said two low-pass filters to neighborhood integer pixels.

8. (Previously Presented) A video decoding method including motion compensation prediction step in which motion compensation prediction means divides a decoding target frame into a plurality of blocks, generates a prediction reference image that are formed by providing

interpolated pixels which are produced by interpolation between integer pixels of a reference frame in a predetermined region of the reference frame and performs motion compensation based on a motion vector included in compression data by using the prediction reference image,

wherein, in the motion compensation prediction step, complexity extraction means extracts complexity information which indicates a degree of complexity of movement between said coding target frame and said reference frame for each of the plurality of blocks, and

predicted image generating means determines the number of filtering pixels depending on said complexity information for each of the plurality of blocks on basis of a predetermined rule, wherein said filtering pixel is said interpolated pixel which have pixel values produced by applying the low-pass filter having the narrower spectral band-pass in low frequency band of two low-pass filters with different high-frequency cutoff characteristics which preliminarily stored to neighborhood integer pixels.

9. (Previously Presented) The video decoding method according to claim 8, wherein the complexity extraction means uses an absolute value of a differential motion vector of a block neighboring the block for which the complexity information is to be extracted as the complexity information.

10. (Previously Presented) The video decoding method according to claim 8 further including decoding step in which decoding means decodes compression data including compression codes which are generated by converting predicted residual difference image produced by calculating a difference between the decoding target frame and the predicted image into a set of coefficients on the basis of a predetermined conversion rule and encoding the set of coefficients,

wherein the complexity extraction means uses the numbers of non-zero coefficients among the coefficients in a block neighboring the blocks for which the complexity information is to be extracted as the complexity information.

11. (Original) The video decoding method according to claim 8, wherein the complexity extraction means uses an absolute value of a differential motion vector of the blocks for which complexity information is to be extracted as the complexity information.

12. (Previously Presented) A computer readable medium having a video decoding program which causes a computer to function as motion compensation prediction means for dividing a decoding target frame into a plurality of blocks, generating a prediction reference image that are formed by providing interpolated pixels which are produced by interpolation between integer pixels of a reference frame in a predetermined region of the reference frame and performing motion compensation based on a motion vector included in compression data by using the prediction reference image,

the motion compensation prediction means having:

complexity extraction means for extracting complexity information which indicates a degree of complexity of movement between said coding target frame and said reference frame for each of the plurality of blocks;

filter storing means for preliminarily storing two low-pass filters with different high-frequency cutoff characteristics; and

predicted image generating means for determining the number of filtering pixels depending on said complexity information for each of the plurality of blocks on basis of a predetermined rule, wherein said filtering pixel is said interpolated pixel which have pixel values produced by applying the low-pass filter having the narrower spectral band-pass in low frequency band of said two low-pass filters to neighborhood integer pixels.

13. (New) The video encoding method according to claim 1, wherein the interpolated pixels comprise the filtering pixels; and

wherein the number of interpolated pixels that are filtered is determined based on the complexity information.

14. (New) The video encoding method according to claim 13, wherein the integer pixels comprises original pixels;

wherein the predicted image comprises original pixels and interpolated pixels; and
wherein none of the original pixels are filtered.

15. (New) The video encoding method according to claim 2, wherein the interpolated pixels comprise the filtering pixels; and

wherein the number of interpolated pixels that are filtered is determined based on the complexity information.

16. (New) The video encoding method according to claim 15, wherein the integer pixels comprises original pixels;

wherein the predicted image comprises original pixels and interpolated pixels; and
wherein none of the original pixels are filtered.

17. (New) The computer readable medium according to claim 6, wherein the interpolated pixels comprise the filtering pixels;

wherein the number of interpolated pixels that are filtered is determined based on the complexity information;

wherein the integer pixels comprises original pixels;
wherein the predicted image comprises original pixels and interpolated pixels; and
wherein none of the original pixels are filtered.

18. (New) The video decoding apparatus according to claim 7, wherein the interpolated pixels comprise the filtering pixels;

wherein the number of interpolated pixels that are filtered is determined based on the complexity information;

wherein the integer pixels comprises original pixels;
wherein the predicted image comprises original pixels and interpolated pixels; and
wherein none of the original pixels are filtered.

19. (New) The video decoding method according to claim 8, wherein the interpolated pixels comprise the filtering pixels;

wherein the number of interpolated pixels that are filtered is determined based on the complexity information;

wherein the integer pixels comprises original pixels;
wherein the predicted image comprises original pixels and interpolated pixels; and
wherein none of the original pixels are filtered.

20. (New) The computer readable medium according to claim 12, wherein the interpolated pixels comprise the filtering pixels;

wherein the number of interpolated pixels that are filtered is determined based on the complexity information;

wherein the integer pixels comprises original pixels;

wherein the predicted image comprises original pixels and interpolated pixels; and

wherein none of the original pixels are filtered.